Amendment to the Claims

In the Claims:

Please cancel Claims 1-33.

Please amend Claims 34-38, 40 and 41 as follows:

1.-33. (Cancelled)

34. (Currently Amended) A method for detecting a feature [[on]] associated with an object using an imaging system, comprising the steps of:

(a) providing at least one labeled probe that selectively binds to said feature, wherein said at least one labeled probe comprises a binding element that selectively binds to at least a portion of said feature, and at least one optical signaling component;

(b) exposing said object to said at least one labeled probe under conditions that cause said at least one labeled probe to bind to at least a portion of said feature, if said feature is associated with said object, such that a plurality of different optical signaling components become bound to said feature;

(c) collecting light from said object along a collection path;

(d) focusing the collected light to produce an image corresponding to the object, locations of labeled probes bound to [[a]] said feature included in the image being optically discriminated but not spatially discriminated in the image;

(e) detecting the image to produce a signal indicative of each optical signaling component bound to ~~the feature on the object~~ said feature;

(f) analyzing the signal to determine if a spectral component due to [[the]] each optical signaling component bound to said feature is present in the image, thereby establishing that [[the]] said feature is associated with the object.

35. (Currently Amended) The method of Claim 34, wherein the step of exposing said object to said at least one labeled probe comprises the step of exposing said object to a labeled probe that comprises said plurality of different optical signaling components, thereby binding said plurality of optical signaling components to said feature.

36. (Currently Amended) The method of Claim 35, wherein the step of exposing said object to [[a]] said at least one labeled probe comprises the step of exposing said object to a labeled probe that comprises a plurality of identical optical signaling components.

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37. (Currently Amended) The method of Claim 36, wherein the step of analyzing the signal comprises the step of determining if an intensity of a waveband of light indicative of [[a]] said plurality of different optical signaling components is present in the image.

38. (Currently Amended) The method of Claim 35, wherein the step of exposing said object to [[a]] at least one labeled probe comprises the step of exposing said object to a labeled probe that comprises a plurality of different optical signaling components.

39. (Original) The method of Claim 38, wherein the step of analyzing the signal comprises the step of determining if a multiplex of a spectral signature for each of the plurality of different optical signaling components is present in the image.

40. (Currently Amended) The method of Claim 35, wherein the step of exposing said object to [[a]] at least one labeled probe that comprises the plurality of optical signaling components comprises the step of exposing said object to at least two labeled probes, each of which comprises a binding element that selectively binds to at least a portion of the feature, [[and]] each of which comprises at least one optical signaling component, one of which includes a different optical signaling component, thereby binding the plurality of different optical signaling components to said feature.

41. (Currently Amended) The method of Claim 34, further comprising the step of dispersing the light that is traveling along the collection path into a plurality of light beams, as a function of a plurality of different discriminable characteristics of the light; wherein:

(a) the step of focusing the collected light to produce an image corresponding to the object comprises the step of focusing each of the plurality of light beams to produce a respective image corresponding to that light beam, thereby generating a plurality of images;

(b) the step of detecting the image comprises the step of responding to each of the plurality of images, producing a different signal for each of the plurality of images; and

(c) the step of analyzing the signal comprises the step of analyzing each different signal produced for each of the plurality of images to determine if indicative spectral signals produced by the plurality of different optical signaling components are present ~~in the plurality of images~~, thereby establishing that the feature is associated with the object.

42. (Original) A method for probing an object with labeled probes to detect if any of a plurality of specific features is associated with the object, using an imaging system that does not

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spatially resolve locations of the labeled probes on any specific feature, the method comprising the steps of:

(a) for each specific feature to be detected, providing at least one labeled probe that selectively couples to a corresponding specific feature, wherein each labeled probe comprises a binding element that selectively binds to at least a portion of the specific feature, and at least one optical signaling component that is bound to the specific feature by the binding element;

(b) exposing said object to said at least one labeled probe for each specific feature to be detected, under conditions that cause each labeled probe to couple to at least a portion of its corresponding specific feature, if that corresponding specific feature is associated with said object, such that at least two optical signaling components become bound to each specific feature associated with said object, each of said at least two optical signaling components that is bound to each specific feature being uniquely optically discriminable based upon a multiplex of the light from the optical signaling components, without spatially resolving a location of each labeled probe coupled to a specific feature;

(c) simultaneously detecting light from all optical signaling components associated with said object, producing a corresponding signal; and

(d) analyzing the signal to detect each optical signaling component bound to any specific feature associated with the object, thereby determining which specific feature is associated with the object.

43. (Original) The method of Claim 42, wherein the step of exposing said object to said at least one labeled probe comprises the step of exposing said object to a labeled probe having a plurality of optical signaling components, thereby binding the plurality of optical signaling components to said corresponding specific feature associated with the object.

44. (Original) The method of Claim 43, wherein the step of exposing said object to a labeled probe comprises the step of exposing said object to a labeled probe that comprises a plurality of identical optical signaling components.

45. (Original) The method of Claim 43, wherein the step of exposing said object to a labeled probe comprises the step of exposing said object to a labeled probe that comprises at least two different optical signaling components.

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46. (Original) The method of Claim 43, wherein the step of exposing said object to a labeled probe comprises the step of exposing said object to at least two labeled probes selected to selectively bind to different portions of a first specific feature, each of said at least two labeled probes comprising:

(a) a binding element that selectively binds to at least a portion of the first specific feature;

(b) at least one optical signaling component that is bound by the binding element to said at least a portion of the first specific feature, so that a plurality of optical signaling components are bound to the first specific feature.

47. (Original) The method of Claim 42, wherein the step of simultaneously detecting light from all signaling components associated with said object comprising the steps of:

(a) collecting light from said object along a collection path, said light comprising a multiplexed optical signal from the optical components coupled to each feature;

(b) focusing the collected light to produce an image corresponding to the object; and

(c) detecting the image, said collected light forming the image including optical components indicative of the optical signal components that are bound to each specific feature associated with the object.

48. (Original) The method of Claim 42, wherein the step of simultaneously detecting light from all optical signaling components bound to each feature associated with said object comprises the steps of:

(a) collecting light from said object along a collection path; and

(b) dispersing the light that is traveling along the collection path into a plurality of light beams, as a function of a plurality of different discriminable characteristics of the light;

(c) focusing each of the plurality of light beams to produce a respective image corresponding to that light beam, thereby generating a plurality of images; and

(d) detecting the plurality of images.

49. (Original) The method of Claim 42, wherein each optical signaling component comprises a fluorescent dye, further comprising the step of directing sufficient energy toward said object, such

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that the fluorescent dye is excited to emit a fluorescent light comprising a uniquely discriminable characteristic of the optical signal component.

50. (Original) The method of Claim 42, wherein an optical signature of said plurality of optical signaling components bound to each specific feature is uniquely discriminable based on an intensity of multiplexed light from the plurality of optical signal components.

51. (Original) The method of Claim 42, wherein a spectral signature of the plurality of optical signaling components bound to a specific feature is uniquely discriminable based on its spectral composition of light from the plurality optical signal components.

Please add new Claims 52-53 as follows:

--52. (New) A method for determining whether or not a specific physical feature is part of an object using an imaging system, comprising the steps of:

(a) providing a set of labeled probes defining a spectral signature to that uniquely identifies the specific physical feature, such that the spectral signature uniquely identifying at least one specific physical feature comprises at least two spectrally distinguishable optical signaling components;

(b) exposing the object to the set of labeled probes under conditions that cause the labeled probes to bind to the specific physical feature, if the specific physical feature is part of the object, such that the at least two spectrally distinguishable optical signaling components become bound to the specific physical feature;

(c) simultaneously detecting light from all optical signaling components associated with the object, producing a corresponding signal; and

(d) analyzing the signal to determine if the spectral signature uniquely identifying the specific physical feature is present, thereby determining whether or not the specific physical feature is part of the object.

53. (New) A method for probing an object with labeled probes to detect if any of a plurality of specific physical features are associated with the object, using an imaging system that collects spectral data from each labeled probe associated with the object simultaneously, the method comprising the steps of:

(a) for each specific physical feature to be detected, providing a set of labeled probes defining a spectral signature to that uniquely identifies the specific physical feature, such that

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the spectral signature uniquely identifying at least one specific physical feature comprises at least two spectrally distinguishable components;

(b) exposing the object to each set of labeled probes for each specific physical feature to be detected, under conditions that cause at least one labeled probe from a corresponding set of labeled probes to couple to its corresponding specific physical feature, if that corresponding specific physical feature is associated with the object;

(c) simultaneously detecting light from all labeled probes bound to a specific physical feature associated with the object, producing a corresponding signal; and

(d) analyzing the signal to identify each spectral signature included in the light detected, to determine which specific physical features are associated with the object.--

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